

Review

Epidemiology and Management of Diarrheal Disease in HIV-Infected Patients

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ABSTRACT

Diarrhea is the most common gastrointestinal symptom in human immunodeficiency virus (HIV) infection. It affects up to 90% of patients, becoming more frequent and severe as the immune system deteriorates. It often is associated with significant morbidity and mortality particularly in the developing countries. Gastrointestinal infections, some of which are attributable to inadequate sanitation and poor hygiene are the predominant cause of diarrhea, although multiple medications, including traditional herbs, also may be causes. The basic principles of management include detection of treatable causes, relief of symptoms, prevention of malnutrition, and psychosocial support. In up to 60% of cases, no cause can be identified, partly because of inadequate investigative facilities. Symptomatic treatment is the mainstay of management particularly when no cause can be identified. Unfortunately this can be extremely difficult when the patient is severely immune-suppressed. There is poor response to motility control drugs, such as loperamide, and others, such as octreotide, are too expensive. Fluid replacement should be started early to prevent excessive dehydration. This should be combined with nutritional support to prevent malnutrition. Psychosocial support, including counselling, for both the patient and the caring relatives, is required to alleviate anxiety, particularly when the diarrhea becomes intractable.

Key Words: *counselling, diarrhea, education, HIV, nutrition*

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Acquired immune deficiency syndrome (AIDS) was first identified in Africa as slim disease, partly because of the associated chronic diarrhea.^{1,2} This is still true in the developing countries particularly in sub-Saharan Africa, where chronic diarrhea lasting for more than 1 month is still an important mode of clinical presentation. It is associated with significant morbidity and mortality, particularly where both financial and human resources are limited to provide adequate care. In this case, effective management calls for a strategic approach involving both conventional and unconventional principles. This article

discusses practical measures suitable for a poor resource setting for managing diarrhea in human immunodeficiency virus (HIV)-infected patients.

EPIDEMIOLOGY

The Scope of Diarrhea in HIV Disease

The prevalence of diarrhea in HIV-infected patients varies from country to country. In some studies, chronic diarrhea has been reported to occur in 40 to 90% of HIV-infected patients.^{3–6} The prevalence tends to be high in communities where there is overcrowding, with its associated poor sanitation.⁵ It also is related to the prevalence of other conditions that usually are associated with diarrhea, such as parasitic infestation. In the AIDS clinic in Mulago Hospital, Kampala, Uganda, 47% of the patients present with diarrhea as one of their symptoms on their first visit.

CLINICAL PRESENTATION

Diarrhea in Early HIV Infection

Whereas chronic diarrhea in HIV infection may be synonymous with a diagnosis of AIDS, many patients may develop bouts of diarrhea from time to time punctuated with long episodes of good health in between. In such cases, it may be difficult to associate this kind of diarrhea with HIV infection, particularly when the patient's HIV serology may not be known. The diarrhea may be triggered by a common nonserious infection or by a reaction to one of the many medications such patients are likely to take.

As the immune status of such a patient is likely to be reasonably good, the recovery is often uneventful. Occasionally, in some patients, this single attack may be severe enough to require hospital admission to correct the electrolyte imbalance that may have occurred. It also may trigger other opportunistic infections, such as oral candidiasis, because of sudden additional depression of the immune system. In this case, the recovery may be protracted, and the patient fails to regain all his weight to the pre-diarrhea status.

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Diarrhea in Late HIV Disease

Clinically diarrhea in late HIV disease presents with chronic, persistent liquid diarrhea, anorexia, nausea, vomiting, loss of energy, abdominal pain or cramps, flatulence, and severe weight loss.⁷⁻⁸ The familiar scenario here is recurrent episodes of diarrhea, lasting for over a month.⁷ In severe cases, the patient may pass between 10 to 20 or more watery stools in a day with associated extreme dehydration. This may further be complicated by development of hemorrhoids, anal fissures, and rectal bleeding. In a patient who develops ischiorectal abscesses and anal fistulas, there may be additional purulent anal discharge.

In terminal stages, the patient loses sphincter control such that there is continuous soiling of the undergarments. Even patients who are still mobile, are forced to remain indoors close to toilet facility because of the unpredictability of their diarrhea and the associated odor. This scenario of relentless diarrhea is often associated with rapid and severe dehydration and deterioration of the immune system. As a result of this, the patient develops renal shut down and additional opportunistic infections, such as septicemia or tuberculosis.

DIAGNOSIS

In patients who present with chronic diarrhea, the isolation of the underlying causative agent is possible in only 40 to 60% of cases in sub-Saharan Africa.⁹⁻¹² The success of isolation depends on the sophistication of laboratory facilities. Table 1 presents causes of chronic diarrhea in most patients in sub-Saharan Africa.

Where resources and diagnostic facilities are limited, a thorough clinical evaluation is important. This should include a detailed history to document all drugs and herbs that are being taken at the time or have been, in the recent past; a detailed physical examination to detect any underlying clinical problems that could be responsible for the diarrhea; and a digital rectal examination to exclude fecal impaction, which may be associated with overflow incontinence. Fecal impaction may insidiously

Table 1. Causes of Chronic Diarrhea in Patients with HIV Disease

Infectious Causes	Noninfectious Causes
<i>Cryptosporidium</i>	Medications
<i>Isospora belli</i>	Multiple drug therapy
<i>Microsporidia</i>	Traditional herbs
Giardiasis	Malabsorption
Shigellosis	High osmotic food and drink
Amebiasis	HIV enteropathy
Salmonellosis	Lactose intolerance
<i>Strongyloides</i>	Obstruction with overflow incontinence
Candidiasis	Rectal incontinence
<i>Campylobacter</i>	Stress
Cytomegalovirus	
<i>Mycobacterium avium</i> complex	

occur in bedridden patients with minimal activity. The integrity of the anal sphincters also should be assessed, because they may be affected in patients with autonomic dysfunction.

MEDICAL MANAGEMENT

General Principles

For any patient who presents with diarrhea at any stage of HIV infection, the following basic principles of care should be adopted^{13,14}:

1. Specific treatment of the underlying cause if known
2. Fluid replacement
3. Management of complications
4. Symptomatic treatment of diarrhea
5. Nutritional support
6. Education of the patient and the caring family about early and appropriate intervention with the view of reducing morbidity and mortality and protecting those caring for the patient
7. Psychosocial support for the patient and the caring family.

Specific Treatment of Underlying Causes of Diarrhea

Where a cause can be identified, it should be treated early and aggressively if an appropriate drug is available. Where such a drug is available, such as for *Salmonella* infection, aggressive and prolonged treatment is required. This is because of the patient's impaired immune surveillance, particularly in late HIV disease.

When a patient is taking many drugs and any of them may be responsible for the diarrhea, it is good practice to stop all medications for 24 to 72 hours. This may be followed by a remarkable improvement in the diarrhea. Where it may not be feasible to stop all drugs, a selection of one or two drugs at a time that are likely to be the culprit should be done. Many patients in sub-Saharan Africa take traditional herbs in all sorts of combinations for various reasons. This information may not be volunteered by the patient who may assume that it is not relevant. Stopping such herbs also may help in resolving the diarrhea.

Critical appraisal of the dietary habits of the patient may identify a likely cause of the diarrhea, such as lactose intolerance. Appropriate dietary advice should be given whereby the item likely to cause diarrhea is eliminated from the diet.

Fluid Replacement

Fluid replacement is the cornerstone in the management of fluid loss as a result of diarrhea and vomiting due to any cause. In mild-to-moderate dehydration, oral rehydration may be enough, particularly if it is started early.

Where vomiting coexists with diarrhea, patients should be instructed to take small amounts of oral fluids frequently (a tablespoonful or two at a time). Large amounts taken in one dose may induce further vomiting because of sudden distention of the stomach. The ideal fluid should be freshly prepared from oral dehydration salts sachets. Where these are not available, any fluid will do, as long as it is hygienically prepared.

In most African countries, passion fruit, oranges, and other fruits are readily and cheaply available. Their preparations should contain a small amount of added sugar to emulate the commercially prepared oral dehydration salts. Too much added sugar is likely to make the diarrhea worse. Where such fruits are not available locally, prepared solutions of 8 teaspoons of sugar and 1 of table salt in one liter of boiled but cool water should be given.

In severe dehydration, parental fluids should be started early and given aggressively but cautiously. In severely emaciated patients, fluid overload can easily occur, particularly when central line venous pressure monitoring facilities are not available. While the patient is receiving parental fluids, oral fluids also should be introduced early and continued thereafter. This will encourage early mobilization and reduce the risks of prolonged immobilization.

Management of Complications

Patients with severe diarrhea in late HIV disease may develop profound dehydration, which may lead to a number of complications, including electrolyte abnormalities, particularly hypokalemia. This results in severe weakness and hypotonia. Where facilities are available, serum electrolyte levels should be obtained. The hypokalemia should be corrected by potassium chloride (KCl) supplements. Where KCl is not available, oral rehydration salts (ORS) and local juices may help. Most local juices, such as those from passion fruit and oranges contain a reasonable amount of potassium. Fortunately, early intervention in correcting the dehydration by appropriate intravenous fluids can prevent such complications from developing.

The morbidity associated with severe dehydration also may be complicated by the development of other infections, such as severe oral and esophageal candidiasis, septicemia, and multiple abscesses. Antifungal agents, such as ketoconazole, should be given when oral and esophageal candidiasis is present. When septicemia is suspected, blood cultures should be done, if facilities are available, otherwise broad-spectrum antibiotics should be started. Where abscesses are identified, these should be incised, drained, and cultured if facilities are available.

Symptomatic Treatment of Diarrhea

In over 60% of cases, no specific cause of diarrhea can be identified.⁹ In this case, management consists of

symptomatic control of diarrhea. The drugs often used include adsorbent and bulk-forming types, such as kaolin, and antimotility drugs such as loperamide. Kaolin is readily available and inexpensive, but unfortunately, it is not usually very effective in chronic diarrhea. Patients may be advised to increase their fiber content in their diet, although this often makes food less palatable, particularly in the presence of anorexia. Antimotility drugs occasionally may relieve the associated abdominal cramps and even stop the diarrhea, particularly in those with early HIV disease. However, in chronic diarrhea their usefulness is often limited. In many cases, the benefit obtained from such drugs is short-lived, and patients end up trying them all without any long-lasting success. Some of these drugs do cause variable sedation, which may make the patient appear weaker to the caring family. Newer agents, such as octreotide, are too expensive and are not readily available.

Nutritional Support

Persistent diarrhea often is associated with malnutrition. This may arise in several ways. Food intake is often limited because of the associated nausea and vomiting. Some of the nutritious foods may themselves cause diarrhea and therefore have to be abandoned. The underlying cause of the diarrhea itself may disrupt the intestinal mucosal surface so that the absorption of nutrients is impaired.

Nutritional support implies that there should be close interaction with a nutritionist, to identify what foods are suitable, available, and affordable by the patient. Where resources and facilities are available, parental nutrition should be considered. In addition to available foods, vitamin supplements are commonly used together with artificially prepared foods. Unfortunately the latter tend to be expensive and out of reach to many patients.

Patient Education

In resource-poor settings where both drugs and qualified health professionals are in short supply, educating patients in the management of their own diarrhea is a good investment. Patient education should cover the following:

- The significance of diarrhea in their HIV disease
- The common causes of diarrhea and how they can be prevented through improved hygienic practices, such as regular washing of hands before eating anything
- Basic principles of effective control and management of diarrhea
- Guidelines on preparing oral rehydration solutions using ORS sachets or any other locally available material

- How to recognize and assess the severity of diarrhea and when to seek medical attention from available health facilities
- General care as it relates to diarrhea, including perianal care, use of incontinent devices to prevent soiling and reduction of the foul odor related to frequent diarrhea by various deodorization techniques.

Similar education also should be given to the caring families. In addition, the family should be educated on how to care for the moribund patient and make him comfortable in spite of the continuous diarrhea. Simple things like use of a plastic sheet to protect the beddings; use of paddings or any other available incontinent devices (e.g., specially designed pants) may encourage the patient to be mobile. However, these need to be changed regularly to reduce the risks of soreness.

The people caring for patients with chronic diarrhea should also be educated on how to protect themselves from accidental HIV infection through contact with the patient's body fluids, particularly fecal contamination. They should always wash their hands with soap and water after each time they come in contact with the patient. It also is good practice for them to wash their hands before they attend to the patient so as not to introduce infections to the susceptible patient. They should use gloves when cleaning the patient or changing soiled beddings. Where gloves are not available, the attendant should use another clean, dry piece of cloth as a hand protection while cleaning and removing soiled linen. Attendants with abrasions and open wounds on their hands should ask someone else to do the cleaning if they do not have gloves.

Psychosocial Support

Human immunodeficiency virus disease is a chronic problem in which psychosocial support plays a major part in the complete management of the patient. Support can be achieved through counselling both the patient and the caring family. Counselling opportunities should be provided on a regular basis and at any time of contact with a health professional. During counselling sessions, various patient concerns, such as coping emotionally with the diarrhea and other relevant issues should be discussed. Issues need not be only health-related; they may include other things, such as job and family welfare, particularly with regard to children. These issues may be a constant source of worry to the patient, which may interfere with the subsequent management of the diarrhea.

Many caring families in sub-Saharan Africa go through unrecognized and unappreciated distress as they care for

their loved ones with relentless diarrhea. Well-timed counselling to them goes a long way in alleviating stress so that they are able to cope with the difficult task of caring for these patients. In the end it is the patients who benefit most.

CONCLUSION

Chronic diarrhea is a major cause of morbidity in an HIV-infected patient. The approach to its management should be comprehensive. It should address not only the causes of diarrhea and its complications but also the patient as a whole, including the caring family and other care givers.

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